

CLAIMS

What is claimed is:

1. A calorimetric device comprising
 - a) a U-shaped reaction vessel having an inlet and an outlet, and mounted onto a support at or near the inlet and the outlet; and
 - b) a sensor.
2. The device of claim 1, wherein the sensor detects temperature input into the reaction vessel and/or temperature output from the vessel required to maintain the reaction vessel at a substantially constant temperature.
3. The device of claim 1, further comprising a coating layer on the reaction vessel, wherein the coating layer provides for mechanical bending of the reaction vessel in response to a temperature change within the reaction vessel.
4. The device of claim 1, further comprising a coating layer on the reaction vessel, wherein the coating layer provides a means of detecting a change in electrical properties of the coating layer in response to a temperature change within the reaction vessel.
5. The device of claim 1, further comprising a reflector mounted onto the reaction vessel.
6. The device of claim 1, wherein the device detects temperature changes in the range of from about 1 pJ to about 1000 pJ.
7. The device of claim 1, wherein the reaction vessel has a total volume capacity in a range of from about 1 μ l to about 1 ml.
8. The device of claim 1, wherein the reaction vessel comprises a sensor layer that detects a temperature change in the vessel.
9. The device of claim 8, wherein the sensor layer is selected from a thermistor, a piezoelectric material, and a piezoresistive material.

10. The device of claim 1, wherein the reaction vessel is embedded in a micromechanical cantilever.
11. The device of claim 10, wherein the reaction vessel is enclosed in a vacuum.
12. An array comprising a plurality of the device of claim 1.
13. The array of claim 12, further comprising a data storage means.
14. The array of claim 12, further comprising a data analysis means.
15. A method of detecting a temperature change that occurs in a process, the method comprising
introducing a sample comprising a chemical reactant, a biological entity, or a macromolecule into the device of claim 1; and
detecting a temperature change in the reaction vessel.
16. The method of claim 15, wherein the process is selected from a chemical reaction, a biochemical reaction, a binding reaction, a physical process, a light-induced process, and a biological reaction.
17. The method of claim 15, wherein the device comprises a reflector mounted on the reaction vessel, and wherein said detecting comprises detecting a light beam reflected from the reflector.
18. The method of claim 17, wherein the detecting is by a charged coupled device.
19. The method of claim 15, wherein said detecting comprises detecting bending of the reaction vessel.
20. The method of claim 19, wherein said detecting is by a capacitor.